Quantum ATL M2500 Library User's Guide Addendum—Prism FC420 Bridge Option

Introduction 3

Fibre Channel Overview 3

Library Operation After Prism FC420 Bridge Installation 3

Cabling the ATL M2500 Library for Fibre Channel 4

One- and Two-Drive Library Cabling 4

Cabling with Three or More Drives 5

Setting SCSI IDs 8

Configuring FC420 Firmware 9

Setting Up an Ethernet Connection 9

Verifying Current FC420 Firmware 11

Setting Local Echo Mode 11

Scanning the SCSI buses on the Library 11

Creating a Map File for the FC420 12

Making Other Configuration Changes 12

Updating FC420 Firmware 13

Prism FC420 Services Software Commands 14

Prism FC420 Service Software Operation 14

Command Syntax 15

List of Abbreviations 15
Command Listing 15

Introduction

This addendum supplements the *Quantum ATL M-Series Library User's Guide* by describing the configuration and operation of the FC420 Fibre Channel Bridge option installed in the Quantum ATL M2500 library.

For FC420 installation steps, refer to the *FC420 Fibre Channel Bridge Quick Reference Guide* (PN 6473033).

For a description of M-Series library operating procedures, see the *Quantum ATL M-Series Library User's Guide* (PN 6423002).

Fibre Channel Overview

The Quantum ATL M2500 library is controlled by a host computer via a SCSI differential bus using the SCSI-2 medium changer command set. The library's Prism Architecture™ allows for easy conversion from the SCSI host interface to a Fibre Channel host interface by installing the FC420 Bridge option.

Fibre Channel is a serial data transfer architecture for use with computers and mass storage devices. Fibre Channel is rapidly emerging to challenge SCSI as the interface of choice for host-to-storage applications.

Fibre Channel advantages include:

- Connection distances of up to 500 meters
- Up to 2 GB/sec data transfer rates with Autonegotiate
- Support for up to 126 devices on a loop
- Support for 24-bit addressing for over 16 million devices in point-to-point mode or fabric, when using a Fibre Channel switch or multiple Fibre Channel switches.
- Operating system independence
- Interconnect flexibility
- Fibre Channel fabric switches provide full direct connectivity between all ports on a network, which can increase the total throughput of all devices on a network.

Library Operation After Prism FC420 Bridge Installation

Once the Prism FC420 Bridge SCSI to Fibre Channel option is installed and tested, the library operates exactly as a library with a SCSI host interface. User operation of the library via the graphical user interface (GUI) panel is unchanged.

Cabling the ATL M2500 Library for Fibre Channel

The cabling configuration used for the ATL M2500 library with the FC420 option depends on the following factors:

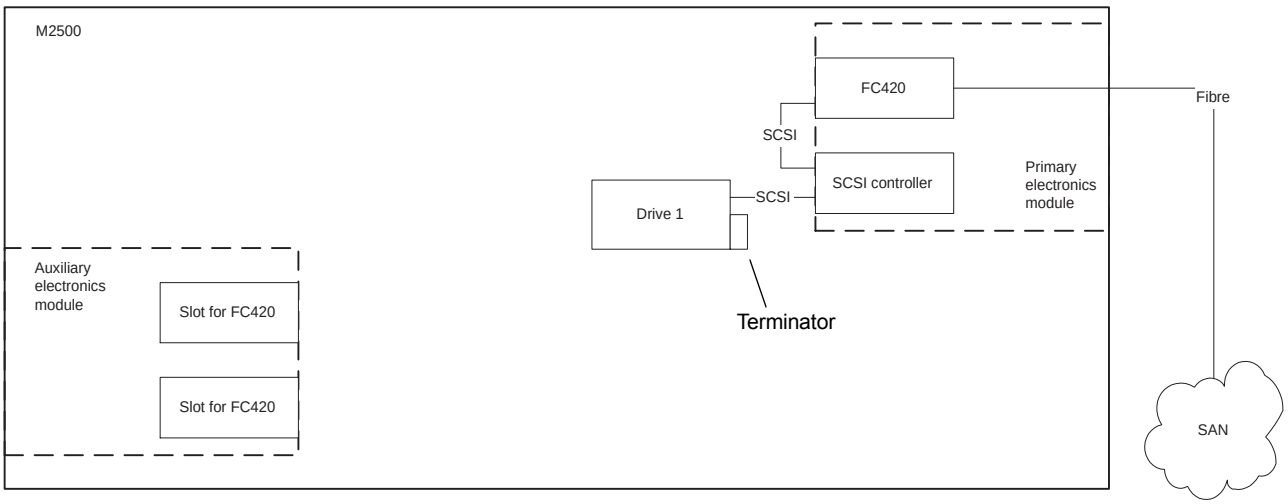
- Number of tape drives installed
- Tape drive type (DLT8000, SDLT, or LTO)
- Number of FC420 Fibre bridges installed
- Data transfer rate of the storage area network (SAN)

One- and Two-Drive Library Cabling

If the ATL M2500 library has only one or two tape drives, the cabling is the same regardless of drive type or SAN. One- or two-drive libraries only require one FC420 Fibre bridge.

Figure 1 shows the cabling for a one-drive library.

Figure 1 One-Drive Cabling

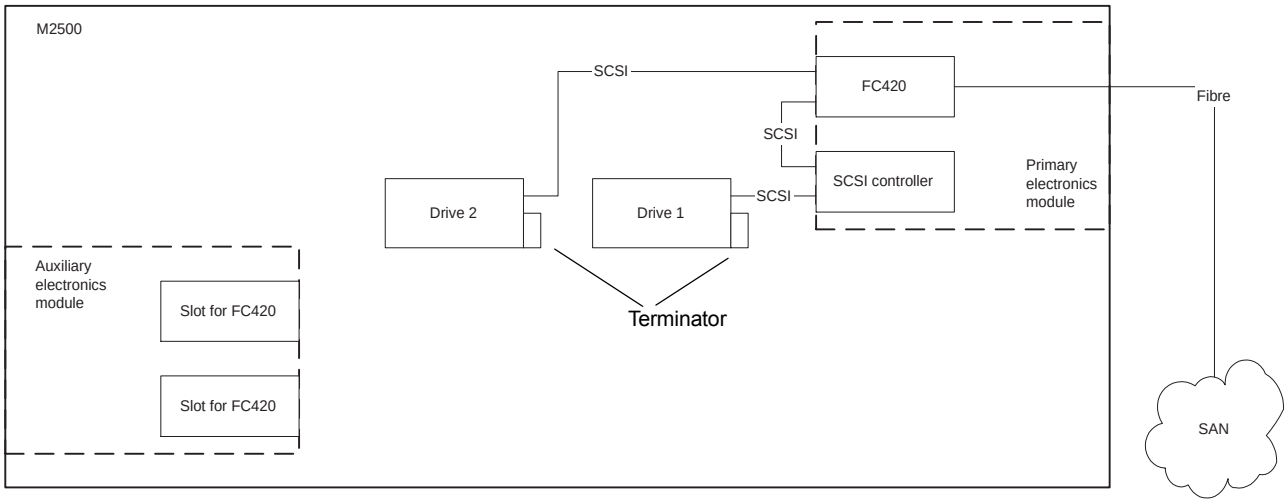


As shown in the figure, a SCSI daisy chain is established from one of the SCSI ports on the FC420 to the SCSI controller and then to drive 0, where the daisy chain is terminated. The SCSI controller is included in the chain to pass SCSI commands to the robot.

The SCSI controller and drive 1 must be on the same SCSI bus because the SCSI controller has termination disabled.

Figure 2 shows typical cabling for a two-drive library.

Figure 2 Two-drive Cabling



In a two-drive library, the second drive (Drive 2) should be connected to the available FC420 SCSI port, creating a second SCSI bus. This fully utilizes the FC420 Fibre bridge and maximizes the communication bandwidth available to each tape drive.

Cabling with Three or More Drives

When cabling ATL M2500 libraries with three or more tape drives, you need to know the type of tape drive installed in the library and the data transfer rate of the SAN to determine the correct SCSI configuration.

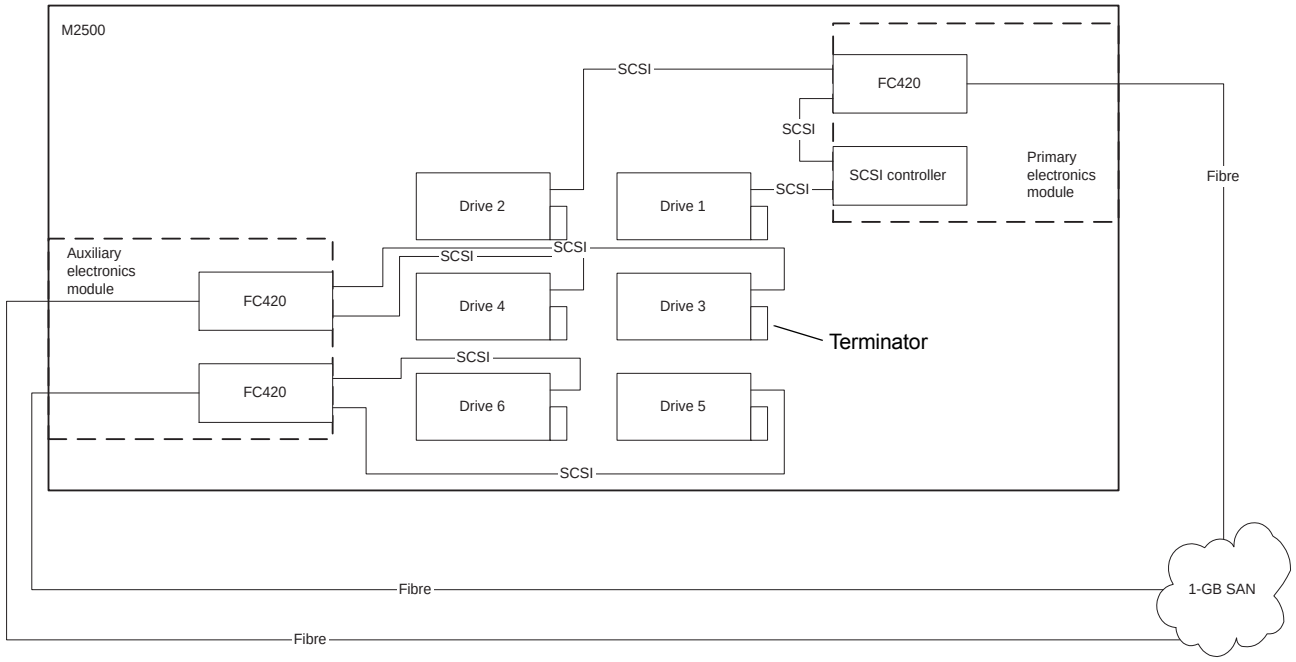
> **Note:** As with the one- and two-drive configurations, all Fibre-to-SCSI cabling configurations must include the SCSI controller so that SCSI commands intended for the robot are successfully communicated.

SDLT/LTO Drive Cabling with a 1-GB SAN

For example, if you have SDLT or LTO drives and a 1 GB SAN, Quantum recommends a ratio of one tape drive per FC420 SCSI port. This means that three- and four-drive libraries would require a second FC420 Fibre bridge, and five- and six-drive libraries would require three FC420 bridges, as shown in Figure 3.

> **Note:** SDLT and LTO tape drives are sometimes referred to as *Superdrives*.

Figure 3 One-Drive-Per-FC420-Port Cabling



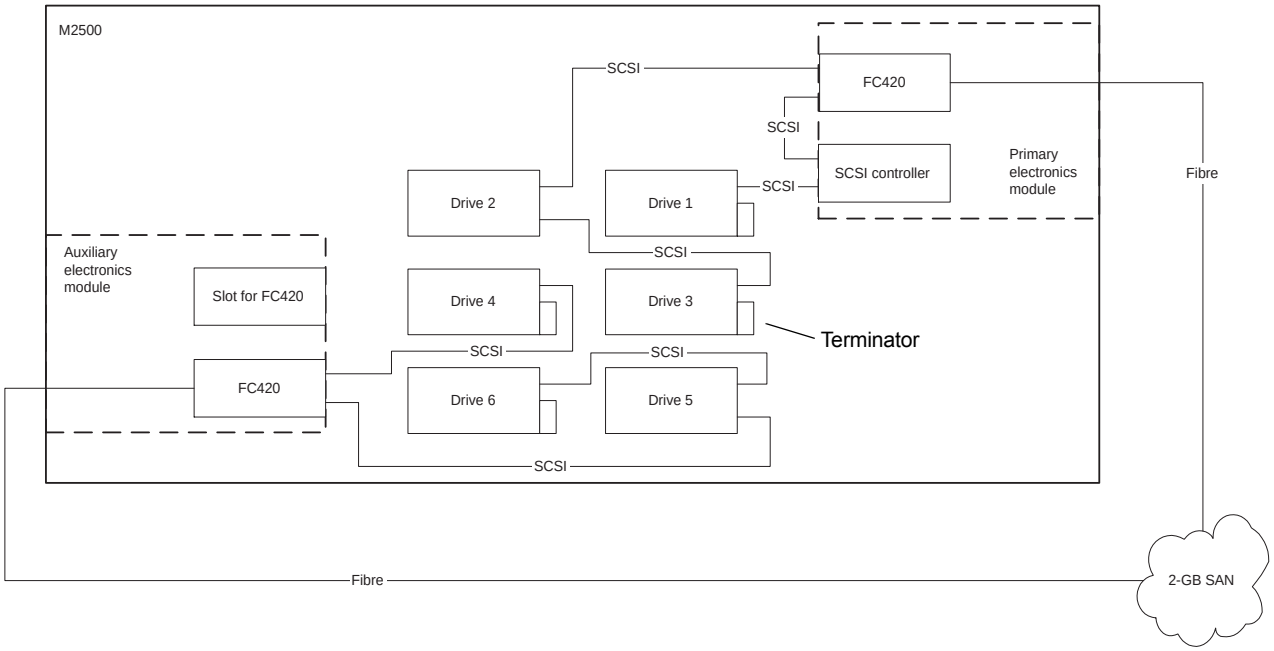
SDLT/LTO Drive Cabling with a 2-GB SAN

If the ATL M2500 library with SDLT or LTO drives is connected to a 2-GB SAN, Quantum recommends a maximum ratio of 2 tape drives per FC420 SCSI port. This means that one FC420 Fibre bridge could manage up to four tape drives, but a second FC420 Fibre bridge would be required for libraries with five or six tape drives.

Figure 4 shows a six-drive library utilizing a two-drive per port cabling scheme.

> **Note:** To increase the bandwidth available to each tape drive, install additional FC420 Fibre bridges and use the cabling configuration shown in figure 3.

Figure 4 Two-Drives-Per-FC420-Port Cabling

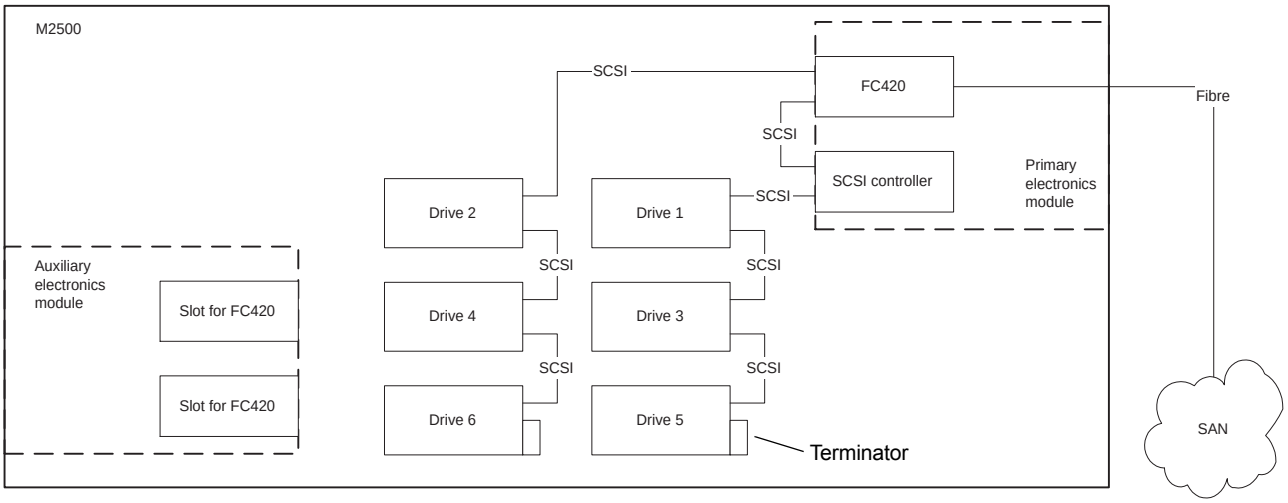


DLT8000 Drive Cabling

A single FC420 Fibre bridge installed in an ATL M2500 library with DLT8000 tape drives can manage up to four drives per SCSI port. Figure 5 shows a typical cabling configuration, with the SCSI controller and three drives on one bus and three drives on the other bus.

> **Note:** To increase the bandwidth available to each drive, install additional FC420 Fibre bridges and use the cabling configuration shown in figure 3 or in figure 4.

Figure 5 Typical Cabling with DLT8000 Drives



Setting SCSI IDs

Use the information in table 1 to set the SCSI device addressing (SCSI IDs) for the library.

Table 1 SCSI ID Settings

Device	SCSI ID	Device	SCSI ID
SCSI Controller	0	Drive 3	4
Drive 0	1	Drive 4	5
Drive 1	2	Drive 5	6
Drive 2	3		

Configuring FC420 Firmware

Each FC420 Fibre bridge installed in the ATL M2500 library must be configured using the FC420 Prism Bridge Services software. The key to successfully configuring the FC420 Fibre bridge is to:

- Know exactly how the SCSI cabling in the library is configured including:
  - How many FC420 Fibre bridges are present in the library.
  - How many SCSI buses are present in the library.
  - How many SCSI devices are connected to each bus.

    This was established in the previous section of this document.
- Use the FC420 Prism Bridge Services software to create a Map file identifying which SCSI devices are electrically connected to which Fibre Channel ports on the FC420 board.

The major steps for configuring FC420 Fibre bridge firmware involve:

- Setting Up an Ethernet Connection
- Verifying Current FC420 Firmware on page 11
- Setting Local Echo Mode on page 11
- Scanning the SCSI buses on the Library on page 11
- Creating a Map File for the FC420 on page 12

> **Note:** These major steps must be repeated for each FC420 Fibre bridge in the library.

Setting Up an Ethernet Connection

To set up an Ethernet connection between the FC420 Fibre bridge and a service PC or other stand-alone computer:

1. Establish a physical connection between the FC420 bridge and the computer using a CAT 5E crossover cable. To do this:
   - **a** Make sure the computer and library are both turned off.
   - **b** Attach one end of the cable to the RJ-45 connector at the bottom of the FC420 bracket.
   - **c** Attach the other end of the cable to the NIC port on the computer.
2. Turn on the computer.

3 Set network properties and specify an IP address for the computer.

   a Right-click the network icon on the computer's desktop.

   For some versions of Windows, this icon may be labeled **Network Neighborhood**. For other versions of Windows, the icon may be labeled **My Network Places** or something similar.

   b When the pop-up menu appears, select **Properties**. A Network dialog box appears.

   c Click the **Protocols** (Windows NT) or **Connections** (Windows 2000 or later) tab.

   d Double-click the **TCP/IP Protocol** menu item. The TCP/IP Properties dialog box appears.

   e Click the **Specify an IP address** option button. The IP Address, Subnet Mask, and Gateway fields become active.

   f Type **10.0.0.*x*** (where ***x*** is a number between 2 and 253) in the IP Address field, **255.255.255.0** in the Subnet Mask field, and nothing in the Gateway field.

   g Click **OK** until you completely exit all dialog boxes.

   h For Windows NT users, open a DOS window and type **ipconfig/release <Enter>** followed by **ipconfig/renew <Enter>**. (For other versions of Windows, this step is not required.)

4 Turn on the library.

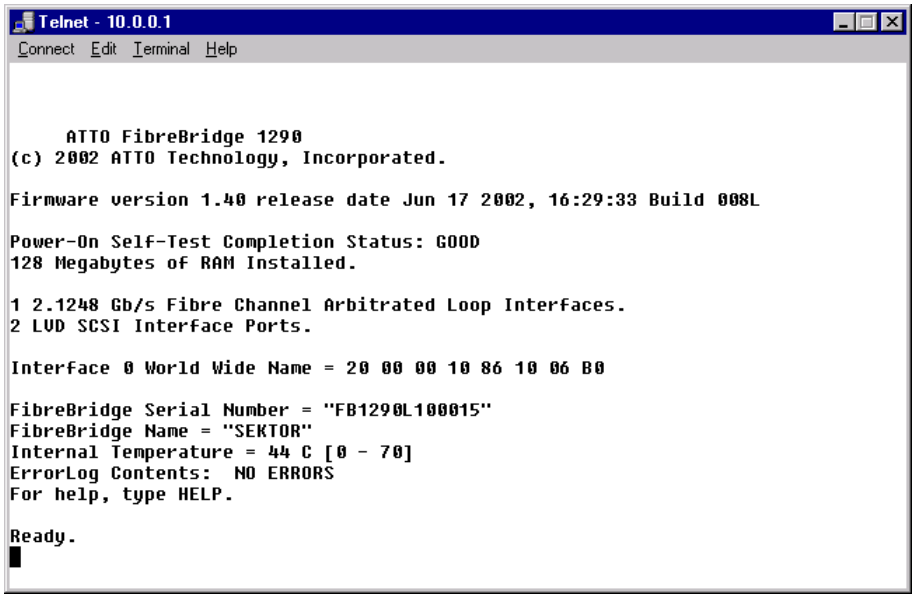
5 Establish a Telnet connection to the FC420 Fibre bridge. To do this:

   a Start a Telnet session from the computer desktop by selecting **Start > Run**.

   b In the Run dialog box, type **telnet 10.0.0.1** and then click **OK**.

   The Telnet window appears (as shown in figure 6), indicating a connection with the FC420 Fibre bridge. When you see the `Ready` prompt, command line mode is available.

Figure 6 Telnet Window Showing Connection with FC420


Telnet - 10.0.0.1
Connect Edit Terminal Help
ATTO FibreBridge 1290
(c) 2002 ATTO Technology, Incorporated.
Firmware version 1.40 release date Jun 17 2002, 16:29:33 Build 008L
Power-On Self-Test Completion Status: GOOD
128 Megabytes of RAM Installed.
1 2.1248 Gb/s Fibre Channel Arbitrated Loop Interfaces.
2 LVD SCSI Interface Ports.
Interface 0 World Wide Name = 20 00 00 10 86 10 06 B0
FibreBridge Serial Number = "FB1290L100015"
FibreBridge Name = "SEKTOR"
Internal Temperature = 44 C [0 - 70]
ErrorLog Contents: NO ERRORS
For help, type HELP.
Ready.
Firmware version information

Verifying Current FC420 Firmware

The Telnet connection window shows the firmware version and gives the firmware revision date. See figure 6.

Use this information to determine if the FC420 Fibre bridge has current firmware.

> **Note:** If you suspect that the firmware needs to be updated, follow the instructions found in Updating FC420 Firmware on page 13.

Setting Local Echo Mode

To set local echo mode, type **set SerialPortEcho enabled** at the `Ready` prompt and then press **<Enter>**.

Scanning the SCSI buses on the Library

Use the following procedure to confirm that the SCSI buses are cabled properly.

1. At the `Ready` prompt, type **scsitargets 0**, and then press **<Enter>**.

   This command scans and displays all SCSI devices found on SCSI bus 0.

2. When the `Ready` prompt reappears, type **scsitargets 1**, and then press **<Enter>** if the second SCSI port on the FC420 bridge is being utilized.

Creating a Map File for the FC420

Each FC420 Fibre bridge in the library requires a map file to identify the SCSI devices in the library electronically connected to each Fibre Channel port on the board.

To create the FC420 Prism Map, perform the following steps:

1. At the `Ready` prompt, type **scsiportlist** and then press **<Enter>**.

   This command returns a list of available SCSI ports and their current status. Valid status values are `OK` and `Failed`.

2. If there are no SCSI bus failures, type **automap** and press **<Enter>**. The automap command executes.

3. When the `Ready` prompt reappears, type **saveconfiguration** and press **<Enter>**.

4. When the `Ready` prompt reappears, type **firmwarerestart** and press **<Enter>**.

Making Other Configuration Changes

The preceding firmware configuration steps are mandatory to ensure the successful operation of the library. After completing these procedures, you may want to make other configuration changes by issuing other service commands.

Service Command List

For your convenience, the entire set of service commands for the FC420 Fibre bridge are listed in the section that follows.

Using the Help Command

You can also obtain a list of service commands by typing **help** and then pressing **<Enter>**.

To get more information about a particular command, type **help** ***command_name*** and then press **<Enter>**. The variable ***command_name*** is the exact name of the command you want information about.

Updating FC420 Firmware

If the FC420 firmware requires updating, follow this procedure:

1. Obtain the latest copy of the firmware. To do this, go to **www.quantum.com/softwaredownload**. Locate and download the appropriate driver.
2. Establish an Ethernet cable connection from the computer with the new FC420 driver to the Fibre Channel bridge to be updated as explained in Setting Up an Ethernet Connection on page 9.
3. From the computer, open a command prompt window and type **ftp** ***[FC420 IP address]*** and then press **<Enter>**.
4. When prompted for a username, type **sysadmin** or the current system administrator ID and press **<Enter>**. When prompted for a password, type **sysadmin** or the current system administrator password and press **<Enter>**.
5. At the command line, type **bin** and then press **<Enter>**.
6. At the command line, type **put** ***[firmware filename]*** and then press **<Enter>**.

   Several messages appear on the screen. Finally, a success message appears.
7. Type **bye** or **quit** and then press **<Enter>**.
8. Repeat steps 1 to 7 to update the firware of other FC420 Fibre bridges installed in the library.
9. Restart the library.

Prism FC420 Services Software Commands

The Prism FC420 Services Software is resident on each FC420 Bridge board, and is used to configure the bridge for use in the library. The software uses a Command Line Interface (CLI) that is usable with any PC and a terminal emulation program such as HyperTerminal or ProComm.

Prism FC420 Service Software Operation

The Command Line Interface provides access to the FC420 services through a set of ASCII-based command lines. Commands have four types of operation:

- *Immediate* — cause an immediate action; not preceded by a **get** or **set** operation.
- *Get* — returns the current value of a parameter or setting. This command may be abbreviated to "g."
- *Set* — changes the value of a parameter or setting. This command may be abbreviated "s," and does not take effect until a SaveConfiguration command is sent.
- *Usage* — if the form of an operation cannot be determined, it is assumed to be the "Usage" form and a brief help message is displayed.

The commands are not case sensitive.

Decimal numbers may be entered as raw numerical input, such as 123.

Octal numbers must be preceded by the number 0, for example 0713.

Hexadecimal numbers must be preceded by the C-style of 0x prefix, such as 9x1FA4.

Quoted strings are treated as a single parameter for any command which expects character input, regardless of space in the string.

Several non-immediate commands require a SaveConfiguration before their modified parameters take effect. When such a command is executed an asterisk appears next to the command line prompt.

Command Syntax

The following is a list of syntax used to describe command lines:

- [ ] indicates required entry
- < > indicates optional entry
- | indicates choose one entry

List of Abbreviations

The following is a list of abbreviations used to describe command lines:

- fpFibre Channel port number (0 - 2)
- flFibre Channel LUN (0 - 31)
- sbSCSI bus number (0 - 3)
- stSCSI target ID (1 - 15)
- sl SCSI LUN (0 - 7)

Command Listing

A list of the currently available Prism FC420 Services Software commands is shown in table 1.

Table 2 Most Common Prism FC420 Services Commands

Command	Description	Default	Syntax
`AutoMap (Immediate)`	Automatically maps all currently operational SCSI devices attached to the FC420 Fibre bridge.		automap
`BootFibreDelay`	Selects/displays the boot fibre delay (in seconds).	0	set bootfibredelay [0 | 15 | 30] get bootfibredelay
`BootScan`	Enables/disables the boot scan feature. This feature provides dynamic mapping of SCSI devices to fibre port/lun combinations via a SCSI port at boot time.	disabled	set bootscan [enabled | disabled] get bootscan
`BootScanPorts`	Selects/displays the ports to be used for a boot scan.	auto	set bootscanports [*fp*] | [all] | [auto] get bootscanports
`ClearEvent (Immediate)`	Clears the contents of the event log.		clearevent

Command	Description	Default	Syntax
`DhcpFixedDelay`	Selects/displays the delay interval (in seconds) between DHCP client requests.	0	set dhcpfixeddelay [0-255] get dhcpfixeddelay
`DispEvent` Sets the switches that controls the filtering performed when displaying events. Switches have the following settings: **[*subsystem*]** switch: mask that controls which subsystem events are displayed. The mask is a byte value with the following bit patterns corresponding to the currently supported subsystems: **0x01** FCP Processor /i960 Interaction **0x02** SCSI Processor/i960 Interaction **0x04** Ethernet (Future) **0x20** NVRAM & Flash To display the events from several different subsystems, use a mask value equal to the logical OR of the corresponding subsystem values. To display events from all subsystems enter the value 3Fh for the mask. **[*event_level*]** switch: mask that controls what reporting level events are displayed. The mask is a byte value with the following bit patterns corresponding to the currently supported reporting levels: 0x01 Info; general information 0x02 Warning; unexpected situation/condition 0x04 Critical; operation limited/curtailed 0x08 Failure; hard failure 0x10 Other; otherwise not categorized 0x20 Debug; tracking events To display events from several different reporting levels, use a mask value equal to the logical OR of the corresponding reporting levels. To display events for all reporting levels enter the value 3Fh for the mask. **[*status*]** switch: has the following two values which correspond to the status of the events to be displayed: all: All events, regardless of their status values are displayed. ngood: Only events with a status other than good are displayed.		0x00 0x00 ngood	set dispevent [*subsystem*] [*event_level*] [*status*] get dispevent
`DispFcPortDB (Immediate)`	Displays the contents of the specified Fibre port's internal database.		dispfcportdb <*fp*>

Command	Description	Default	Syntax
DisplayEvent (Immediate)	Displays the current contents of the event log. The log is filtered by the current switch settings as described in the DispEvent section. If the optional **all** is selected, the display filtering is temporarily suspended and all logged events are displayed.		displayevent < all >
EccLog	Resets/displays the ECC error statistics for the Fibre bridge. The **get** command displays the statistics; the **set** command resets the statistic counters to zero.		set ecclog clear get ecclog
ErrorLog	Resets/displays the error logs for the Fibre bridge. The **get** command displays the logs; the **set** command resets the logs to zero.		set errorlog clear get errorlog
EthernetSpeed	Sets/displays the Ethernet speed of the Fibre connection. If auto is selected, the current speed of the connection is indicated in parentheses in the response to the get ethernetspeed command.	auto	set ethernetspeed [10 | 100 |auto] get ethernetspeed
Exit (Immediate)	Exits the current Telnet command line interface (CLI) session. This command has no effect during a serial or in-band CLI session.		exit
FcAck0	Specifies whether ACK0 or ACK1 will be returned in response to a Class 2 Fibre Channel data frame or sequence. When enabled, this option sends ACK0; when disabled, this options sends ACK1.	disabled	set fcack0 [enabled | disabled] get fcack0
FcClass2	Specifies whether the Fibre bridge will support Fibre Channel Class 2 (Multiplexed) or Class 3 service.	disabled	set fcclass2 [enabled | disabled] get fcclass2
FcConnMode	Sets/displays the connection mode for the FC420 to arbitrated loop or point-to-point. Applies to all three Fibre Channel ports on each board.	loop	set fcconnmode [loop | ptp] get fcconnmode
FcDataRate	Sets/displays the data rate (in GB/s) at which the Fibre bridge will operate.	auto	set fcdatarate [1gb | 2gb | auto] get fcdatarate

Command	Description	Default	Syntax
FcFairArb	Turns on or off the FC-AL arbitration fairness. Applies to all three Fibre Channel ports on each board.	enabled	set fcfairarb [enabled | disabled] get fcfairarb
FcFullDuplex	Enables/disables full duplex communication between the Fibre bridge and other Fibre Channel devices.	enabled	set fcfullduplex [enabled | disabled] get fcfullduplex
FcHard	Enables/disables Fibre Channel hard address assignment. Under soft addressing the FC420 loop address is assigned during loop initialization.	disabled	set fchard [enabled | disabled] get fchard
FcHardAddress	Sets/displays the value used as the FC-AL hard address.	FC port 0 0x03	set fchardaddress [*fp* [*address*]] get fchardaddress [*fp*]
FcInitiator	Enables/disables the initiator function of the Fibre bridge on the Fibre Channel network.	disabled	set fcinitiator [enabled | disabled] get fcinitiator
FcPortList (Immediate)	Lists the available Fibre Channel ports and their current status.		fcportlist
Fcp2	Enables/disables the Fibre bridge's compliance with the FCP-2 Fibre Channel specification.	disabled	set fcp2 [enabled | disabled] get fcp2
Fcp2Conf	Enables/disables the Fibre bridge's capability to request FCP_CONF IUs. This option is only valid when the **fcp2** command is also enabled.	disabled	set fcp2crn [enabled | disabled] get fcp2crn
Fcp2CRN	Enables/disables the Fibre bridge's capability to accept CRNs for precise delivery of SCSI commands. This option is only valid when the **fcp2** command is also enabled.	disabled	set fcp2conf [enabled | disabled] get fcp2conf
FcSCSIBusyStatus	Specify the SCSI status value returned when the FC420 is unable to accept a SCSI command due to a temporary lack of internal resources.	BUSY	set fcscsibusystatus [busy | qfull] get fcscsibusystatus
FcTargets (Immediate)	Provides the node name, Fibre LUN, and inquiry data for every Fibre Channel target device visible to a Fibre bridge operating in initiator mode.		fctargets <*fp*>

Command	Description	Default	Syntax
`FcWWName`	Sets/displays the current World Wide Name (WWN) of the Fibre Channel interface referenced. Each Fibre port has a unique WWN. The least significant 6 bits of the WWN are used as the Ethernet MAC address. The **set** variant of the command allows the user to change the last three bytes of each WWN. Please note, however, that the most significant bit of the three bytes must be 1 in order to provide WWN verification. Also note that the last bit of each WWN may only be assigned one of the following values: 0, 4, 8, or C for port 0; 1, 5, 9, or D for port 1; and 2, 6, A, or E for port 2. Fabric and loop operation is unpredictable if duplicate WWNs are used.	10 00 0x, where x is the Fibre port number.	set fcwwname [*portnumber* [0*xnn* 0*xnn* 0*xnn*]] get fcwwname [*portnumber*]
`FibreBridgeModel`	Reports the specific FC420 model information.		get fibrebridgemodel
`FibreBridgeName`	Specify the 8-character name assigned to the FC420 bridge.	"....."	set fibrebridgename [*name*] get fibrebridgename
`FibreBridgeTargetLUN`	Specify the soft target LUN used by the FC420 when addressed by the host. This LUN is taken from NVRAM.	0x7	set fibrebridgetargetlun [0 - 31]
`FirmwareRestart (Immediate)`	Reboots the FC420 firmware.		firmwarerestart
`Help (Immediate)`	Displays a list of available commands. When the optional command name is present, detailed command-specific information is displayed.		help [command name]
`IdentifyFibreBridge`	Causes the "Fault" LED on the FC420 board to blink continuously until disabled.	disabled	set identifyfibrebridge [enabled | disabled] Get identifyfibrebridge
`Info (Immediate)`	Displays version numbers and other product information for key components within the FC420.		info

Command	Description	Default	Syntax
IPAddress	Sets/displays the current IP address of the Fibre bridge. If the **ipdhcp** command is enabled, the **get** command reports the current IP address assigned by the nameserver.	10.0.0.1	set ipaddress *xxx.xxx.xxx.xxx* get ipaddress
IPDHCP	Enables/disables the capability of the Fibre bridge to request an IP address from a DHCP server on the network.	disabled	set ipdhcp [enabled | disabled] get ipdhcp
IPGateway	Sets/displays the current default gateway. If the **ipdhcp** command is enabled, the **get** command reports the current IP gateway assigned by the nameserver.	0.0.0.0	set ipgateway *xxx.xxx.xxx.xxx* get ipgateway
IPSubnetMask	Sets/displays the current subnet mask. If the **ipdhcp** command is enabled, the **get** command reports the current IP subnet mask assigned by the nameserver.	255.255.255.0	set ipsubnetmask *xxx.xxx.xxx.xxx* get ipsubnetmask
IsReserved (Immediate)	Displays the reservation status of the current Fibre bridge services session/interface. When a reserve flag is set, the configuration image4 is undergoing modification by another Fibre bridge services session. **Set** commands are unavailable while in this state. **Get** commands are available, however. Executing a **saveconfiguration**, **restoreconfiguration**, or **firmwarerestart** command releases the reserved state so that other users may issue set commands.		isreserved

Command	Description	Default	Syntax
LogEvent	Sets the switches which control the filtering performed when logging events. The switches have the following meanings and settings: **[enabled | disabled]** switch: controls whether or not events logging is enabled or disabled. **[*subsystem*]** switch: same as switch for DispEvent in previous section **[*event_level*]** switch: same as switch for DispEvent in previous section **[*status*]** switch: same as switch for DispEvent in previous section	 disabled 3Fh 3Fh all	set logevent [enabled | disabled] | [[*subsystem*] [*event_level*] [*status*]] get logevent
MaxEnclTempAlrm	Sets/displays the maximum enclosure temperature alarm of the unit in degrees C (5-40 degrees C).	70°C	set maxencltempalrm [5 - 40] get maxencltempalrm
Menu	Enables/disabled the menu interface. Entering the command alone without parameters toggles the current state.		menu <[enabled | disabled]>
MinEnclTempAlrm	Sets/displays the minimum enclosure temperature alarm of the unit in degrees C (5-40 degrees C).	0°C	set minencltempalrm [5 - 40] get minencltempalrm
OEMConfigFile	Reports the name (i.e., the contents of the first record) of the OEM configuration file stored in persistent memory. This file is used to override the factory default configuration of the FC420 Fibre bridge.		get oemconfigfile
ParityLog	Resets/displays the parity error statistics for the Fibre bridge. The **get** command displays the statistics; the **set** command resets the statistic counters to zero.		set paritylog clear get paritylog
Performance	Returns the performance data for a user-specified Fibre port.		get performance <*fp*>

Command	Description	Default	Syntax
`Reserve (Immediate)` Reservation of the FC420 is implicit; once the configuration image is changed by any user of services (Serial/Ethernet/Etc.,) the FC420 becomes RESERVED. Performing a SaveConfiguration, RestoreConfiguration or FcRestart RELEASES the FC420 so that other devices may access it. When the FC420 services interface is reserved, **set** commands are unavailable, but **get** commands are available. Note that at least one service interface always has access to the FC420 at all times. This interface always reports a RELEASED status, since it may issue **set** commands.			reserve
`RestoreConfiguration (Immediate)`	Restore to factory default configuration or the last saved configuration. The new configuration must be saved to take effect.		restoreconfiguration [default | saved]
`RouteChange (Immediate)`	Map a Fibre Channel port (*fp*) and LUN (*fl*) to a SCSI bus (*sb*), target (*st*), and LUN (*sl*). Valid route change entries are: *fp* (0-2) *fl* (0-31) *sb* (0-3) *st* (0-15) *sl* (0-7).		routechange [*fp*] [*fl*] [*sb*] [*st*] [*sl*]
`RouteDisplay`	List the currently mapped Fibre Channel-to-SCSI routes.		routedisplay routedisplay [*fp*] routedisplay [online | offline] routedisplay [*fp* [*fl*]] routedisplay [*fp* [online | offline]]
`RouteOffline`	Set the status of a route to offline.		set routeoffline [*fp*] [*fl*] get routeoffline [*fp*] [*fl*]
`RouteOnline`	Set the status of a route to online.		set routeonline [*fp*] [*fl*] get routeonline [*fp*] [*fl*]

Command	Description	Default	Syntax
SaveConfiguration (Immediate)	Save the new configuration. If a firmware restart is required to make the change, the user is prompted to confirm the restart. The user can override the confirmation request by indicating the override value on the command line.		saveconfiguration < restart | nonrestart >
ScsiInitID	Specify the SCSI initiator ID to be used on the specified SCSI port.	0x07	set scsiinitid [*sb* [0-15]] get scsiinitid [*sb*]
ScsiPortBusSpeed	Specifies the transfer rate at which the Fibre bridge will attempt to negotiate with SCSI devices. The choices are Fast SCSI, Ultra SCSI, Ultra 2 SCSI, and Ultra 3 SCSI.	ultra3	set scsiportbusspeed [*portnumber* [fast | ultra | ultra2 | ultra3]] get scsiportbusspeed [*portnumber*]
ScsiPortList (Immediate)	List the available SCSI ports and their status.		scsiportlist
ScsiPortReset (Immediate)	Resets the specified SCSI bus.		scsiportreset [*sb*]
ScsiPortResetOnStartup	Specify whether the SCSI port should be reset on power-up.	enabled	set scsiportresetonstartup [*sb* [enabled | disabled]] get scsiportresetonstartup [*sb*]
ScsiPortSelTimeout	Show the time (msec) that the bridge waits for a response from a SCSI device on the selected port after a selection request.	256 msec	set scsiportseltimeout [*sb* [256 | 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1]] get scsiportseltimeout [*sb*]
ScsiPortSyncTransfer	Specify whether synchronous SCSI transfers should be negotiated with devices on the specified SCSI port.	enabled	set scsiportsynctransfer [[*sb*] [enabled | disabled]] get scsiportsynctransfer [*sb*]
ScsiPortTaggedQueuing	Specify whether tagged command queuing is allowed on the SCSI port.	disabled	set scsiporttaggedqueuing [*sb* [enabled | disabled]] get scsiporttaggedqueuing [*sb*]
ScsiPortWideTransfer	Specify whether wide SCSI transfers should be negotiated.	enabled	set scsiportwidetransfer [*sb* [enabled | disabled]]
ScsiTargets	List the SCSI devices that are on the referenced SCSI bus.		get scsitargets [*sb*]
ScsiTermination	Set the internal termination of the referenced SCSI port.	enabled	set scsitermination [sb [enabled | disabled]] get scsitermination [*sb*]

Command	Description	Default	Syntax
SerialNumber	Reports the FC420 board serial number.		get serialnumber
SerialPortBaudRate	Set the baud rate for the FC420 serial port (2400, 9600, 19200, 38400, 57600, or 115200).	9600	set serialportbaudrate [*rate*] get serialportbaudrate
SerialPortEcho	Turn on or off the echoing of keyboard input.	disabled	set serialportecho [enabled | disabled]
SerialPortHandshake	Set the data handshaking method used for controlling the flow between the transmitter and receiver (hardware, software, or none).	none	set serialporthandshake [hard | xon | none] get serialporthandshake
SerialPortStopBits	Set the number of stop bits for the FC420 serial port (1 or 2).	1	set serialportstopbits [1 | 2] get serialportstopbits
ServicesLUN	Identifies the LUNs (one per Fibre port) to be used during an in-band command line interface (CLI) session with a given host. This information is taken from NVRAM. Any map coinciding with a user-specified ServicesLUN must first be set to offline before attempting to change the ServicesLUN. This map will be destroyed upon power-cycling the Fibre bridge. Disabling a ServicesLUN for a particular Fibre port will destroy the map to the Fibre bridge for that port.	8	set serviceslun [*fp*] [[*fl*] | disabled] get serviceslun <[*fp*]>
SpeedWrite	Enables/disables SpeedWrite functionality to any SCSI device currently mapped to the Fibre bridge. To enable/disable SpeedWrite for a particular device, specify the SCSI bus (*sb*), the target (*st*), and the LUN (*sl*). Specify "all" to enable/disable this option for all currently mapped SCSI devices.		set speedwrite [*sb st sl* | all] [enabled | disabled] get speedwrite [*sb st sl* | all]
SpeedWriteDefault	Enables/disables SpeedWrite functionality as a default condition when SCSI devices are mapped to the Fibre bridge.	disabled	set speedwritedefault [enabled | disabled] get speedwritedefault
Temperature	Reports the unit temperature in degrees C.		get temperature

Command	Description	Default	Syntax
VerboseMode	Sets the Command Line Interface to display extended information about a parameter when the **help** command is given. When verbose mode is enabled, parameter values are generally preceded by labels in responses to the **get** commands. Only the parameter value is output when verbose mode is disabled.	enabled	set verbose [enabled | disabled] get verbose
Virtual Drive Response	Enables/disables the virtual drive response feature, which allows the Fibre bridge to provide proxy responses to SCSI INQUIRY and TEST UNIT READY commands in the event of a SCSI device selection time-out or busy event.	disabled	set virtualdriveresponse [enabled | disabled] get virtualdriveresponse
XCDevices	Displays information about the devices used in a specified Extended Copy command. The *cmdnumber* variable is obtained using the **xcstatus** command. This command returns the following information: device type, vendor ID, product ID, serial number, and data direction.		get xcdevices [*cmdnumber*]
XCError	Retrieves any SCSI sense data returned by an Extended Copy command as the result of an error.The *cmdnumber* variable is obtained using the **xcstatus** command. This command returns the following information: SCSI status, sense key, ASC, and ASCQ. If a device involved in the command's data transfer also returned sense data, the device ID (serial number) along with sense data for the device will be displayed.		get xcerror [*cmdnumber*]

Command	Description	Default	Syntax
`XCStatus`	Allows the user to poll for the status of Extended Copy commands issued to the Fibre bridge. Each Extended Copy command is identified with a unique number. This number (called *cmdnumber*) is used when invoking the **xcdevices** and **xcerror** commands.		get xcstatus
`Zmodem (Immediate)`	Transfers a firmware image or NVRAM parameter file to or from the bridge using ZMODEM file transfer protocol.		zmodem [send [*filename*] | receive]